REMARKS

Claims 18-39 are pending. Claims 28, 29, and 34 have been amended in this response. Support for the amendment of claim 28 can be found, for example, at page 4, line 12 through page 5, line 22 of the English-language translation of the original application. Claims 18-27, 38, and 39, which have been withdrawn from consideration in response to a restriction requirement, have been canceled. No new claims have been added. Claims 28-37 will be pending upon entry of the above amendments.

Objection to the Specification

The specification has been objected to because the following language added by amendment to the paragraph beginning on page 10, line 7 of the English-language translation of the original application purportedly does not have support in the specification as originally filed: "with respect to the symmetrical arrangement around the dual gob outlet 5, 5'." Applicants have amended the noted paragraph in this response to replace the objectionable language with the language that appeared in the specification as originally filed.

Claim Objections

Claims 29 and 30 have been objected to as being of improper dependent form for failing to further limit the subject matter of a previous claim. In particular, it has been asserted in the office action that claims 29 and 30 set forth limitations directed to an intended mode of operation for the claimed device, and do not further limit the structure of the claimed device (office action at pg. 5, lines 16-19). Applicants respectfully disagree.

Claim 29 recites, in part: "wherein the control unit determines after each cycle for each preform station whether the mass reference value difference of the glass gob produced during the cycle is greater than a threshold value; and if the mass reference value difference is determined to be greater than the threshold value, the plunger movement profile is adjustable for the subsequent cycle."

Claim 30 recites, in part: "wherein the control unit changes the movement profiles of the plunger by changing one or more parameters selected from the group including: a standstill period for the plunger in a lower and/or upper end position of the plunger; a duration of the downward and/or upward movement of the plunger; a speed structure of the downward and/or upward movement of the plunger; a stroke of the plunger; and a position of the plunger in relation to an orifice ring of the feeder head during the stroke of the plunger."

Each of dependent claims 29 and 30 thus imposes additional functional limitations on a structural element (the control unit) recited in claim 28, from which claims 29 and 30 depend. Applicants respectfully submit, therefore, that claim 29 and 30 are of proper dependent form in that each claim further limits the claim from which it depends.

To the extent the Examiner may object to the use of functional language in claims 29 and 30, Applicants respectfully note that Section 2173.05(g) of the Manual of Patent Examining Procedure states, in part: "[t]here is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used" (case citations omitted).

Claim Construction Under 35 U.S.C. § 112, sixth paragraph

It has been asserted in the office action that the specification lacks structure relating to a "means for determining mass reference value differences for the glass gobs" as recited in claim 28 of the present application." Applicants respectfully disagree. Applicants respectfully direct the Examiner's attention to the following language at page 12, line 19 through page 13, line 6 of the English-language translation of the original application:

> By means of the pressing plunger sensor 50, a position signal is generated which provides a statement relating to the size of the maximum insertion depth of the pressing plunger 42 into the mold tool. The greater the maximum insertion depth, the smaller the gob mass which has entered into the preform recess 56. The measured pressing plunger end position is transmitted by the signal amplifier/signal evaluating unit 65 to the control circuit 67. The control circuit 67 compares the measured pressing plunger end position with a desired value for the pressing plunger end position which has been input to the control circuit 67 via the input/output unit 69. The desired values of the pressing plunger end position can be adjusted separately for each preform station 35 of the IS glass forming machine.
> The deviation obtained therefrom between the desired value and the actual value of the pressing plunger end position is converted into a mass difference or weight difference with consideration given to the known cross-sectional area of the pressing plunger 42. This mass difference is transmitted via the signal output 70 to the drive controller 71. In the drive controller 71, a real mean value of the mass differences of all gobs of a machine cycle is formed.

Thus, the specification clearly indicates that the structure corresponding to the "means for determining mass reference value differences for the glass gobs" recited in claim 28 is the control circuit (67).

Claim Rejections Under 35 U.S.C. § 112, second paragraph

Claims 28-37 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, it has been asserted in the office action that "the written description fails to explicitly describe the corresponding structure or structure which actually perform the claimed function, determining mass reference value differences" (office action at pg. 7, lines 6-8). Applicants respectfully disagree.

As discussed above, the specification discloses structure corresponding to the "means for determining mass reference value differences for the glass gobs" in the form of the control circuit (67). Accordingly, withdrawal of the rejection of claims 28-37 under 35 U.S.C. § 112, second paragraph is respectfully requested.

Claim Rejections Under 35 U.S.C. §103(a)

Claims 28-33 and 35-37 have been rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,660,610 ("the DiFrank patent"). Claim 34 has been rejected under 35 U.S.C. § 103(a) as being obvious over the DiFrank patent in view of U.S. Patent No. 4,682,998 ("the Ayala-Ortiz patent"). Applicants respectfully submit that the claims of the present application, as amended herein, are patentably distinct from the DiFrank and Ayala-Ortiz patents, and the remaining prior-art references of record, for at least the following reasons.

Independent claim 28 of the present application is directed to:

> A device for regulating the mass of glass gobs used to produce hollow glass containers in an individual section glass forming machine, the individual section glass forming machine having

> two or more sections each comprising at least one preform station such that each preform station is capable of processing glass gobs of a weight different from those in another preform station so that glass containers of different weights can be made, wherein the glass forming machine operates on a cyclic basis in which one glass gob is provided to each preform station, and wherein the individual section glass forming machine can produce an assortment of hollow glass containers of different weights in each cycle.

The device of claim 28 addresses the difficulties associated with forming a glass gob with a desired mass in an individual section glass forming machine in which gobs of <u>different masses</u> are being produced consecutively during each cycle of the machine, using the same feeder head. This problem is discussed in the English-language translation of the original application:

> a manual adjustment of different consecutive movement profiles of the plunger with the objective of achieving a specific sequence of different gob weights is very difficult to achieve or cannot be achieved satisfactorily because the weight of each gob is influenced by the size of the previously output gobs, i.e. in other words it is dependent upon the "previous history" of the feeder operation. For example, during the production of a series of light gobs, the glass level in the feeder head will rise, if one or several relatively heavy gobs have been produced beforehand. The reason for this is that during the sequence of the lighter gobs, less glass flows out of the feeder head than during the preceding sequence of heavier gobs. This would result in different weights of the articles produced from the sequence of the lighter gobs, if a different plunger movement profile is not selected for each of the lighter, identical gobs. The more different the provided gob weights are in one machine cycle of an IS (Individual Section) glass forming machine or the less symmetry is in the weight sequence, the greater the problem is. English-language translation at pg. 3, line 24 through pg. 4, line 6.

The application provides an example of the claimed inventive concepts being applied to an individual section glass forming machine in which a first series of glass gobs of a particular desired mass, and a second series of gobs of a different desired mass are being produced consecutively during each cycle of the machine:

> Whereas in the above-described situations as shown in Figures 4 and 5, an assortment is to be produced with only two different article weights and in an alternating sequence in the operating sequence (firing order), it can also be possible for example that although the assortment includes only two different article weights, it is intended in a sequence of eight feeder cycles of an 8-DG machine to produce initially two heavy gob pairs (e.g. 168 g per gob) and then 5 light gob pairs (e.g. 160 g per gob) and subsequently to produce another heavy gob pair. The sequence of the five light gob pairs on the run ensures that the glass level 18 inside the restrictor pipe 7 rises increasingly during the period of the sequence, as less glass flows out. Without a corresponding control procedure, the gob pairs would have different masses within this light sequence. The same would be true for a heavy sequence. The method and device in accordance with the invention render it possible within a short period of time to control the desired masses of the gobs, in that for each gob which is produced an associated plunger movement profile is adjusted. English-language translation at pg. 16, lines 8-20.

Summarizing the above excerpts, supplying molten glass to multiple sections of an individual section glass forming machine from the same feeder head during each cycle of the machine can make it difficult to achieve a desired weight for the glass gobs, when glass gobs of different desired weights are being produced during the cycle. This problem arises, for example, due to the changing level of molten glass in the feeder head caused by the metering of different amounts molten glass from the feeder head to facilitate the formation glass gobs of different weights. For example, the level of the molten glass can undergo changes when

five relatively heavy gobs are produced before three relatively light gobs during each cycle of an eight-section machine. The changing level of molten glass can influence the amount of molten glass metered from the feeder head at each station, which in turn can make it difficult to achieve a desired mass for the glass gobs.

Claim 28 of the present application has been amended in this response to more clearly define the inventive features that address the above problem, i.e., achieving a desired weight for glass gobs being produced in an individual section glass forming machine in which gobs of different masses are being produced consecutively during each cycle of the machine. Specifically, claim 28, as amended herein, recites in part:

> at least one plunger disposed in the feeder head, said at least one plunger being moveable upward and downward in the feeder head in accordance with a changeable plunger movement profile, each said plunger having a said changeable plunger movement profile associated with one preform station of each of said sections of the glass forming machine such that each plunger has as many said changeable plunger movement profiles as there are sections, wherein the movement of the at least one plunger influences a mass of the molten glass discharged from the feeder head; [and]
>
> a control unit in communication with the means for determining said mass reference value difference, the control unit being configured to (i) change each changeable plunger movement profile based on the mass reference value difference for each the preform station associated therewith and (ii) implement the changed movement profiles during a subsequent cycle so that the measured actual mass values of subsequently-formed glass gobs are made to approximate the reference desired mass value in a stepwise manner.

The DiFrank patent discloses an apparatus for feeding molten glass to a forming machine. The apparatus includes a needle assembly that "can be adapted to automatic weight control [of glass gobs] by using a signal from a forming machine plunger press as an

indication of glass gob weight" (the DiFrank patent at col. 2, lines 60-64). There is no discussion in the DiFrank patent of using the needle assembly as part of an individual section glass forming machine. Thus, as recognized in the office action, the weight control methodology disclosed in the DiFrank patent is not applied to each preform station of an individual section glass forming machine (office action at pg. 9, lines 7-9).

The DiFrank patent neither recognizes nor addresses the problem of achieving a desired weight for glass gobs being produced in an individual section glass forming machine in which gobs of different masses are being produced consecutively during each cycle of the machine. The DiFrank patent neither recognizes nor addresses this problem because such a problem does not exist in the device of DiFrank patent, which does not supply molten glass to multiple perform stations of an individual section glass forming machine.

In fact, modifying the needle assembly of the DiFrank patent to perform as recited in claim 28 of the present application would alter the principle of operation of the needle assembly and make it unsuitable for its intended purpose, and therefore would not have been an obvious modification to one of ordinary skill in the art at the time of invention. (See Section 2143.01 of the Manual of Patent Examining Procedure.)

The weight control methodology disclosed in the DiFrank patent is used to automatically compensate for the effects of wear on the needles used to control the flow of molten glass through a glass melter bowl (the DiFrank patent at col. 4, lines 5-11 and 30-40). The correction is updated and applied as the needles progressively wear due to the effects of molten glass on the needles. The same correction is thus updated and applied consecutively, i.e., to each successive glass gob being produced using a particular needle.

The device recited in claim 28 of the present application, by contrast, changes or corrects the movement profile of an individual plunger to tailor the movement profile to a particular preform that is fed by the plunger once during each cycle of the machine. Since the same plunger feeds two or more preforms during each cycle of the glass-forming machine, (i) a different plunger movement profile is updated and applied each time the plunger is used to feed a preform during a cycle, and (ii) each individual plunger movement profile is updated and applied once during each cycle of the glass-forming machine. Applying this methodology to the needle assembly of the DiFrank patent would alter the principle of operation of the DiFrank needle assembly which, as noted above, generates a correction based exclusively on the progressive wear of the needles used the assembly, and updates and applies the correction on a consecutive basis, i.e., each time the needle is used to form a gob, rather than on cyclical basis.

Applicants respectfully submit, therefore, that it would not have been obvious to one of ordinary skill in the art at the time of invention to modify the device of the DiFrank patent to produce the device claimed in amended claim 28 of the present application. Applicants further submit that the Ayala-Ortiz patent and the remaining prior-art references of record, alone or in combination with the DiFrank patent, likewise do not render claim 28 obvious.

Withdrawal of the rejection of claim 28 (and claims 29-37, which depend therefrom) under 35 U.S.C. § 103(a) is respectfully requested in view of the above amendments and remarks.

A notice of allowability is respectfully requested.

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